

On-line Bin Packing with Restricted Repacking: Lower Bounds¹

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In 1996 Ivkovič and Lloyd [1] gave a lower bound of $\frac{4}{3}$ for those one-dimensional fully dynamic bin packing algorithms, where the number of repackable items is restricted to a constant in each step. In this paper we improve this result to about 1.3871. We present our proof for a semi-on-line case of the classical bin packing, but it works for the same case of fully dynamic bin packing as well. We prove the lower bound by analyzing and solving a specific optimization problem with non-linear constraints. The bound can be expressed exactly using the Lambert W function.

References

- [1] Z. Ivkovič and E.L. Lloyd. A Fundamental Restriction on Fully Dynamic Maintenance of Bin Packing, *Information Processing Letters*, 59(4): 229-232, 1996.

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